IN THE CLAIMS

For the convenience of the Examiner, the pending claims are reproduced below:

Listing of Claims:

1. (Cancelled).

2. (Currently amended) A Ziegler-Natta catalyst for olefin production wherein the catalyst is represented by the general formula

$$[(R^1)_n (R^d)_m A(R^2)E]MX \qquad (I)$$

wherein:

A is a carborane dianion;

R^1 is H, a C_1-C_{12}-hydrocarbyl aliphatic or aromatic group and n is U or 1, said R^1 being attached to a carbon atom of A;

R^d is H, a C_1-C_{12}-hydrocarbyl aliphatic or aromatic group, a halide, an O-alkyl or N-alkyl group and m is 0 or an integer from 1 to 5, said R^d being attached to a boron atom of A;

R^2 is a constrained chiral center enriched **hydrocarbyl** bridge comprising at least two ~~bridging~~ **carbon** atoms ~~selected from the group consisting of carbon and Si~~, wherein at least one bridging **carbon atom may be replaced by Si** ~~atoms is a chiral center~~;

E is a heteroatom anion of group 15 or 16 of the Periodic Table (IUPAC), which is bridged to A via R^2

M is a fourvalent metal cation selected from the group consisting of titanium, zirconium, hafnium and tin; and

X is a valence group saturating the remaining coordination valence of the central metal atom.

3. (Original) The catalyst according to claim 2, wherein A is a $C_2B_9H_{10}$ carborane dianion.

4. (Original) The catalyst according to claim 2, wherein R^1 is selected from C_1-C_{12}-hydrocarbyl aliphatic or C_1-C_{12}-hydrocarbyl aromatic group, wherein said C_1-C_{12}-hydrocarbyl aliphatic or C_1-C_{12}-hydrocarbyl aromatic group is optionally linked to a support.

5. (Original) The catalyst according to claim 4, wherein the C_1-C_{12}-hydrocarbyl aliphatic or C_1-C_{12}-hydrocarbyl aromatic group is linked to a support by a polymer chain.

6. (Original) The catalyst according to claim 5, wherein said polymer chain comprises ethylene or propylene monomer units, wherein said monomer units are optionally substituted by C_1-C_{12}-hydrocarbyl aliphatic or aromatic groups.

7. (Cancelled)

8. (Original) The catalyst according to claim 2, wherein R^2 is a constrained chiral center enriched hydrocarbyl bridge having at least one chiral center in the hydrocarbyl bridge, selected from straight chain or cyclic $(-WR^a{}_2-)_n$, wherein W is C or Si and may be same or different in a bridge, R^a may be same or different and is selected from H, halogen, methyl, ethyl, propyl, butyl or isomers thereof, and n is an integer from 2 to 8.

9. (Currently amended) The catalyst according to claim 2, wherein R^2 is a hydrocarbyl bridge selected from the group consisting of cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl and cyclooctyl, and wherein R^2 is optionally substituted by one or more of [[~~H,~~]] halogen, methyl, ethyl, propyl, butyl or isomers thereof.

10. (Original) The catalyst according to claim 2, wherein the heteroatom E is selected from the group consisting of N, P, As, Sb, O, S, Se and Te.

11. (Original) The catalyst according to claim 10, wherein the heteroatom E is selected from the group consisting of N, P and O.

12. (Original) The catalyst according to claim 2, wherein the heteroatom E is a $-NR^3$ or $-PR^3$ anion, wherein R^3 is a C_1-C_{12}-hydrocarbyl aliphatic or aromatic group.

13. (Previously presented) The catalyst according to claim 2, wherein X is a valence group selected from the group consisting of halide, pseudo-halide, sulfonate, $-NR_m$, wherein R is a lower alkyl group having 1 to 6 carbon atoms or aryl and m is 1 or 2, a weak-coordinating anion and non-coordinating anion.

14. (Original) The catalyst according to claim 13, wherein the weak coordinating or non-coordinating anion is selected from the group consisting of $[CB_{11}]^-$, BF_4^-, BPh_4^- and PF_6^-.

15. (Currently amended) A Ziegler-Natta catalyst for olefin polymerization comprising a metal cation of Group 4 or 14 of the Periodic Table (IUPAC 1976), wherein the catalyst is represented by the general formula

$$[(R^1)_n (R^d)_m A(R^2)E]MX \qquad (I),$$

wherein:

A is a $C_2B_9H_{10}$-carborane dianion;

R^1 is methyl, ethyl or phenyl, and n is 0 or 1, said R^1 being attached to a carbon atom of A;

R^d is a halide, an O-alkyl or N-alkyl group, and m is 0 or an integer from 1 to 3, said R^d being attached to a boron atom of A;

R^2 is a bridge ~~comprising~~ **consisting of** a constrained ~~5 to 8 membered,~~ chiral center enriched ring having two to four carbon atoms between A and E, at least one of which carbon atoms being chiral, **said bridge having the formula** ~~selected from 5 to 8 membered cyclic~~ $(-WR_2^-)_n$, wherein W is C or Si and may be same or different in the bridge, R may be same or different and is selected from H, halogen, methyl, ethyl, propyl, butyl or isomers thereof **and n is an integer from 5 to 8**;

E is a heteroatom anion selected from $[NR^3]^-$ or O^-, which is bridged to A via R^2, E being optionally substituted by R^3 anion, wherein R^3 is a C_1-C_{12}-hydrocarbyl aliphatic or aromatic group;

M is a fourvalent metal cation selected from the group consisting of titanium, zirconium, hafnium and tin; and

X is a valence group.

16. (Original) A Ziegler-Natta catalyst for olefin polymerization comprising a metal cation of Group 4 or 14 of the Periodic Table (IUPAC 1976), wherein the catalyst is represented by the general formula

$$[(R^1)_n (R^4)_m A(R^2)E]MX \qquad (I),$$

wherein:

A is a C_2B_9-carborane dianion;

R^1 is methyl, ethyl or phenyl attached to a carbon atom of A; n is 1;

m is 0;

R_2 is a cyclohexyl ring having two carbon atoms between A and E;

E is $-[NR^3]-$ or $-O^-$, wherein R^3 is a C_1-C_{12}-hydrocarbyl aliphatic group, E being bridged to A via R^2;

M is a fourvalent metal cation selected from the group consisting of titanium and zirconium; and

X is a valence group.

17. (Withdrawn-Currently amended) A process for preparing a Ziegler-Natta catalyst for olefin polymerization comprising:

a) reacting $[(R^1)_n(R^4)_m(C_2B_9H_{11})]$ with an organic base, and an electrophilic compound comprising at least two backbone atoms;

b) reacting the compound obtained in a) with an alkali metal hydroxide in the presence of a quaternary ammonium salt; and

c) reacting the compound obtained in b) with an organic base and MXZ_3;

wherein R^1 is selected from the group consisting of C_1-C_{12}-hydrocarbyl aliphatic group, C_1-C_{12}- aromatic group and a polymer chain, optionally linked to a support, preferably a polymer chain, said polymer chain comprising ethylene, propylene monomer units, said unit optionally being substituted by C_1-C_{12}-hydrocarbyl aliphatic or aromatic groups, said support serving to immobilize the ZN catalyst;

R^d is selected from the group consisting of H, a C_1-C_{12}-hydrocarbyl aliphatic group, C_1-C_{12}-hydrocarbyl aromatic group, a halide, an O-alkyl group and N-alkyl group;

at least one of the backbone atoms is ~~forms~~ a chiral center;

M is a fourvalent metal cation of Group 4 or 14 of the Periodic Table (IUPAC 1976) and

X is a valence group saturating the remaining coordination valence of the central metal atom;

Z is a leaving group selected from halide, sulfonate, or NR'R", wherein R' is hydrogen, alkyl, aryl, alkylaryl or arylalkyl and R" is alkyl, aryl, alkylaryl or arylalkyl.

18. (Withdrawn) The method according to claim 17, wherein the electrophilic reagent is an alkyl halide.

19. (Withdrawn) The method according to claim 17, wherein the electrophilic reagent is an 5 to 8 membered cyclic alkenyl oxide.

20. (Withdrawn) The method according to claim 17, wherein the fourvalent metal cation is selected from the group consisting of titanium, zirconium, hafnium and tin.

21. (Cancelled)

22. (Withdrawn-Currently Amended) A method of polymerizing olefins comprising reacting olefin monomers or mixtures thereof in the presence of a Ziegler-Natta catalyst for olefin polymerization wherein the catalyst is represented by the general formula

$$[(R^1)_n(R^d)_mA(R^2)E]MX \qquad (I)$$

wherein:

A is a carborane dianion;

R^1 is a H, C_1-C_{12}-hydrocarbyl aliphatic or aromatic group and n is 0 or 1, said R^1 being attached to a carbon atom of A;

R^d is H, a C_1-C_{12}-hydrocarbyl aliphatic or aromatic group, a halide, an O-alkyl or N-alkyl group and m is 0 or an integer from 1 to 5, said R^d being attached to a boron atom of A;

R^2 is a constrained chiral center enriched **hydrocarbyl** bridge comprising at least two ~~bridging~~ **carbon** atoms ~~selected from the group consisting of carbon and Si~~, wherein at least one bridging **carbon atom may be replaced by Si** ~~atoms is a chiral center;~~

E is a heteroatom anion of group 15 or 16 of the Periodic Table (IUPAC), which is bridged to A via R^2;

M is a fourvalent metal cation selected from the group consisting of titanium, zirconium, hafnium and tin; and

X is a valence group saturating the remaining coordination valence of the central metal atom.

23. (Withdrawn-Currently Amended) The method according to claim 22, wherein said olefin monomers are functionalized by being substituted by a member selected from the group consisting of alkyl, oxyalkyl, halogen, carboxylic acid group, aryl, and substituted aryl.

24. (Withdrawn) The method according to claim 23, wherein said functionalized olefins monomers are halogenated olefins monomers.

25. (Withdrawn) The method according to claim 24, wherein said halogenated olefin monomer comprises vinylchlorid and tetrafluoroethylene.

26. (Withdrawn) The method according to claim 23, wherein said olefin monomers are selected from the group consisting of vinylacetates, acrylates, styrenes and enamines.

27. (Currently amended) A method for preparing a Ziegler-Natta catalyst for olefin polymerizations, wherein the catalyst is represented by the general formula

$$[(R^1)_n(R^d)_mA(R^2)E]MX$$

comprising:

a) reacting $[(R^1)_n(R^d)_mA]$ with an organic base, and an electrophilic compound comprising the moiety $(R^2)E$;

b) reacting the compound obtained in (a) with an alkali metal hydroxide in the presence of a quaternary ammonium salt; and

c) reacting the compound obtained in (b) with an organic base and MXZ_3; wherein

A is a carborane dianion;

R^1 is H, a C_1-C_{12}-hydrocarbyl aliphatic or aromatic group and n is 0 or 1, said R^1 being attached to a carbon atom of A;

R^d is H, a C_1-C_{12}-hydrocarbyl aliphatic or aromatic group, a halide, an O-alkyl or a N-alkyl group and m is 0 or an integer from 1 to 5, said R^d being attached to a boron atom of A;

R^2 is a constrained chiral center enriched **hydrocarbyl** bridge comprising at least two ~~**bridging**~~ **carbon** atoms ~~**selected from the group consisting of carbon and Si**~~, wherein at least one bridging **carbon atom may be replaced by Si** ~~**atoms is a chiral center;**~~

E is a heteroatom anion of group 15 or 16 of the Periodic Table (IUPAC), which is bridged to A via R^2;

M is a fourvalent metal cation selected from the group consisting of titanium, zirconium, hafnium and tin;

X is a valence group saturating the remaining coordination valence of the central metal atom; and

Z is a leaving group selected from halide, sulfonate, and NR'R", wherein R' is H, alkyl, aryl, alkylaryl or arylalkyl and R" is alkyl, aryl, alkylaryl or arylalkyl.

28. (Previously presented) The method according to claim 27, wherein A is a $C_2B_9H_{10}$ carborane dianion.

29. (Previously presented) The method according to claim 27, wherein said electrophilic compound is a 5 to 8 membered cyclic alkenyl oxide.